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AUTHOR Berdan, Robert
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ABSTRACT

A structured elicitation technique, convergent communication, was investigated as a means of constraining the range of linguistic data from children in K-3 without unduly constraining the naturalness of the conversation context. The convergent communication situation is a two-person problem-solving task which ensures that all communication is verbal since the participants are seated on opposite sides of a visual barrier. The subjects, one pair of Anglo students in each grade K-3, were given tasks involving matching and sequencing pictures. The kindergarteners did not complete the tasks, and data from their interview has been excluded. The linguistic aspects investigated were the use of the copula, the use of questions, the use of possessives, and the use of comparative constructions. The relative frequency of these uses was compared with a study by Legum which elicited data from black children by naturalistic observation. The convergent communication technique appears to have value for use by those studying dialects. (MKM)

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THE USE OF CONVERGENT COMMUNICATION FOR LINGUISTIC DATA COLLECTION

Robert Berdan

ABSTRACT

A structured elicitation technique, convergent communication, was investigated as a means of constraining the range of linguistic data from kindergarten to third grade children, without unduly constraining the naturalness of the conversation context. The technique yielded data in which the relative frequency of copula, question, and possessive constructions was increased in comparison with natural observational data; that of comparative constructions was not. The applicability and versatility of the technique seem to increase with the age of the children.

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THE USE OF CONVERGENT COMMUNICATION FOR LINGUISTIC DATA COLLECTION

Robert Berdan

INTRODUCTION

This paper[1] reports a preliminary method-oriented inquiry of the use of structured elicitation for obtaining language data from young children. The elicitation procedure, convergent communication (CC) is evaluated for its suitability with young children and for its ability to elicit the kind of data currently needed for the work of the Dialect Characteristics Activity.

The term convergent communication derives from the work of Garvey & Baldwin, (1970). The situation is a two-person problem-solving task with the participants seated on the opposite sides of a visual barrier. This configuration ensures that all communication is verbal. Each member of the dyad is assigned a role. The knower (K) is given all the factual information necessary for the completion of the task. The doer (D) must complete the task consistent with information given only to K. Typical tasks have included constructing toy models and sequencing pictures (Appendix I).

While the participants are oriented toward solution of the problem, it is the speech they produce which provides the data analyzed here. Both the form and the content of the communication are inherently constrained by the problem solving nature of the task, but these constraints appear to exert minimal influence on the naturalness of the communication.

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[1]Pauline Griffin assisted in the development of the stimulus materials used here, the interviewing and the initial tabulations of data.

The technique appears to have potential value in the inquiry being conducted by the Dialect Characteristics Activity. The requirement is for a data elicitation technique that allows efficient investigation of the natural use of the constructions being analyzed. An efficient technique is one which elicits the desired construction at a reasonably high frequency for a corpus of any given size. It is necessary to consider the naturalness of the data elicited because elicitation context is known to influence linguistic behavior (Ervin-Tripp, 1964). The problem is that the more efficient any given technique is at increasing the frequency of a linguistic construction, the greater is the possibility that the construction is used in some non-natural manner (Labov, 1970).

From the standpoint of naturalness the most desirable technique is the naturalistic observational method. In this the recording apparatus, though not totally surreptitous, is at least unobtrusive. This method is appropriate for making a generalized characterization of a dialect, involving examination of a large number of different features. Most of the desired features will occur at significant frequencies.

Study of a particular aspect of a dialect, however, is quite different. Such studies involve more detailed examination of a linguistic feature in all its relevant contexts. The situation is further complicated by the fact that realizations of the most interesting features are likely to be variable (Labov, et al., 1968, Legum, et al., 1971). The fact that an informant uses a Standard English realization of some construction in a given context does not mean that he uses exclusively

that realization in that context. Before any meaningful statements can be made about an informant's use of a particular feature it is necessary to examine multiple occurrences of that feature in a range of contexts.

The use of the CC elicitation technique is an attempt at efficient collection of natural language data by exerting a strong but flexible control on a communication. The following factors which influence the communication are subject to experimental control.

Format. The term format is used here for a set of tasks which can be performed by using a single problem solving strategy. Different formats require different strategies, resulting in the use of different linguistic constructions.

Task. Within each format the stimulus materials for individual tasks influence the communication (Maclay & Newman, 1960).

Interlocutor. Most of the work in CC has used dyads in which the members were peers. This is not a necessary relationship. The status relationship of the members of the dyads exerts strong influence on style or dialect (Ervin-Tripp, 1964).

LITERATURE

The CC interview technique originated with J.B. Carroll (Carroll et al., 1966) and his work in the Southwest Project in Comparative psycholinguistics.[2] The task was used to compare the communicative efficiency of Zuni, English, and Navaho. In this design only K was allowed to speak.

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[2]Each group of researchers using CC attributes the basic design to Carroll. Maclay worked with Carroll on the Southwest Project. The early Krauss work (Krauss & Weinheimer, 1964, p. 344) cites Carroll. An unpublished version of Baldwin, McFarlane, & Garvey (1970, p. 2) also attributes the design to Carroll.

In an adaptation of the first of these designs Maclay and Newman (1960) studied the effect of telling K whether D performed the task correctly or not. They also looked at the effect of given D homogeneous rather than heterogeneous alternatives. Negative feedback from the experimenter increased the length of each successive trial. Increasing the range of difference among alternatives was found to decrease the number of different morphemes used to perform the tasks.

Krauss and Weinheimer (1966) constructed an experimental situation in which they controlled both the direction of communication (one way or two way, as in the Carroll experiments) and confirmation that the task was performed correctly. The only dependent variable in the study was the length of the reference phrases used to perform the task. Two-way communication shortened these phrases, as did constant confirmation of success.

In later work Krauss and his associates studied the effect of children's age on performance of the CC tasks (Glucksberg, Krauss & Weisberg, 1966; Krauss & Glucksberg, 1969a; Krauss & Glucksberg, 1969b). In other work they studied the effect of social class (Krauss & Rotter, 1968). In general, success with the tasks increased with age. Middle class children performed better than did lower class children.

The previous work which bears most directly on the present study is that of Garvey & Baldwin. In a three-part study (Garvey & Baldwin, 1970; Baldwin & Garvey, 1970; Garvey & Baldwin, 1971) they report on the administration of a group of CC tasks to Black and White dyads of children and of adults. The matching format used here (page 9) is borrowed with little change from their study. Garvey & Dickstein (1970) analyzed

the use of have and got in the protocols of the Garvey and Baldwin study. Of the studies employing CC, Garvey & Dickstein is the only study which attempts linguistic analysis. Unfortunately they discarded as anomolous the most interesting nonstandard utterances in their data.

PURPOSE

Several questions were asked relating to the utility of CC's:

1. Can children as young as kindergarteners perform the tasks adequately?
2. Is the CC techinique flexible enough that it can be used to elicit a wide range of linguistic constructions?
3. Can the task actually constrain the communication sufficiently to guarantee that all informants will use the desired constructions at comparably rates?

The linguistic aspects to be investigated were:

1. The use of the copula.
2. The use of questions.
3. The use of possessives.
4. The use of comparative constructions.

It was anticipated that the CC elicitation procedure would affect these four constructions differently.

1. There was no reason to believe that the rate of use of the copula would change significantly from casual conversation. The copula is one of the most widely discussed features of Black English (Pfaff,

1971) but many details of non-standard usages are still not known. Use of the copula in Black English was considered of sufficient importance to justify its investigation here.

2. Undirected casual conversation produces questions at an unpredictable rate. In interviews with one informant and one interviewer questions are even more difficult to elicit because the interviewer usually exercises the initiative and asks questions while the informant provides answers. It was anticipated that the problem-solving nature of convergent communication would yield questions whatever format or task used.

3. Possessive constructions are not inherent in convergent communication in the same sense that questions are. However, it has been shown that a matching format (Garvey & Dickstein, 1970) elicited a large proportion of possessives, particularily have/got. We predicted that any task in this format in which the objects to be matched differed in part but not totally would yield possessives.

Four different possessive constructions in English were examined.

1. Possessive noun phrase.	the clown's hat
2. Possessive pronoun.	his hat
3. With	the clown with a hat
4. Possessive have/got.	the clown has a hat

The possessive in Black English is interesting for a number of reasons. The 's possessive marker attached to nouns is frequently not used (Gross, 1967). Some speakers, particularily children use the nominative pronoun she in contexts where Standard English employs the possessive her. In constructions with a possessive

main verb, have alternates with have got or got. This is socially stigmatized and is a significant marker of social class in Anglo English (Stolz & Bills, 1968). Other data suggest that Black English may be significantly different from Anglo English in the use of have/got (Legum, et al., 1971; Berdan, in progress).

4. The comparative construction is a very low-frequency complex construction that is acquired comparatively late by many children. The information conveyed in a comparative construction can also be conveyed in a series of absolute statements.

   Comparative "The first pencil is longer than the second pencil".

   Absolute "The first pencil is two inches long and the next one is three inches long".

   In this way any task can be performed without the use of comparatives. We predicted that certain tasks could be constructed which would elicit comparatives and that comparatives used would result from the design of the task, not from the nature of problem-solving communication or any general format.

PARTICIPANTS

One dyad at each grade from kindergarten through third grade was interviewed. All of the children were Anglo, all from a single school.[3] The first and third grade informants were boys; the others were girls.

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[3]The school is in a largely Anglo Los Angeles neighborhood.

MATERIALS

The tasks were presented in four different formats. The materials used in the Matching Format and Sequence Format were prepared at SWRL and are shown in Appendix I.

Matching Format

This format was adapted from Garvey & Baldwin (1970). D receives an 8 1/2 X 11 sheet with seven variations of an imaginary animal or clown printed on it. Four properties of the figure, both alienable and inalienable, are allowed to vary independently. K is given an 8 1/2 X 11 sheet with one of the seven characters printed in the center of it. To perform the task successfully D must determine which of the seven variations was given to K.

Sequence Format

This format was devised for this tryout. Some of the pictures were adapted from Swayze (1967). K receives five related pictures, each on a 3 X 5 card. They are arranged in a non-logical sequence and placed on a specially designed holder, D receives an identical series of cards (or a set with one additional card as explained below) arranged in a different sequence. The task requires D to sequence his cards in the same order as those held by K.

Model Format

This task has adapted from Garvey & Baldwin (1970). K is given a model constructed from the following pieces:[4] five white balls, and two

[4]These materials are part of a set called "Atoms" available from Creative Playthings, Princeton, New Jersey. Considerable force is required to assemble and disassemble the pieces, necessitating some modification.

green balls, each with one hole; three black balls, each with four holes; one red ball with two holes; six long connectors and four short connectors. D is given a comparable model with only one third of the pieces assembled and the rest of the pieces in a box. To complete the task D must assemble the pieces in the box along with the partial model to produce a model comparable to that given to K.

Spare Parts Format

This format was introduced to give the children experience in manipulating the pieces used in the Model Format. It might more properly be considered Coordinate Communication since there is no problem to be solved by the informants.

PROCEDURES

Each dyad was interviewed separately in a mobile laboratory. The children were seated at opposite sides of a low table. A visually opaque screen was installed in the middle of the table to prevent any visual communication. Following the first interview (second grade) a window equipped with a sliding panel was built into the screen about one foot above the table top. This window was only closed while the tasks were actually being performed.

All sessions were tape recorded in stereo. A lavaliere microphone was placed around the neck of each child. The sessions were also video taped. The recording machines were in the back of the van and could not be seen by the children. Two interviewers were present during each of the sessions. Administration of the tasks was handled chiefly by

a staff member.[5] The author assisted in placing the microphones and setting up the stimulus materials for each task.

During the first interview the interviewer remained seated close to the table. The children repeatedly appealed to her for approval and to serve as go-between with the unseen partner. To change this the table was moved to the end of the van and the interviewers approached the table only to give instructions and to manipulate the stimulus materials. Interaction with the interviewer was reduced. D was given a bell to signal the interviewer when the task was completed.

Instructions[6] were given at the beginning of each new format. Initially these were read, but after the second interview they were given without script. The order in which the materials were presented was changed in each interview session. This non-systematic variation was used because of the exploratory nature of this tryout. The order in which the tasks were presented in each interview is listed in Appendix III. For each task the roles of Knower and Doer were alternated between the members of the dyad.

RESULTS

The number of utterances produced in each task is shown in Table 1. An utterance is everything spoken by one informant without major pause or interruption from the other informant. The utterance is not a highly significant unit for statistical purposes since it may range from one word to several sentences in length. However, it is used here to give

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[5]Pauline Griffin

[6]Instructions are given in Appendix II. They also appear in Griffin, (1971).

TABLE 1

Number of utterances produced by each participant in each task

Format/Task	Number of utterances									
	First Grade			Second Grade			Third Grade			Total
	Par. A	Inf. B	Total	Par.A	Par.B	Total	Par.A	Par.B	Total	
Matching Format										
Task 1	21	21	42	*	*	*	7	10	17	59
Task 2	2	2	4	5	5	10	17	17	34	48
Task 3	12	11	23	3	3	6	9	8	17	46
Task 4	5	5	10	*	*	*	8	9	17	27
Task 5	*	*	*	*	*	*	10	11	21	21
TOTAL Matching	40	39	79	8	8	16	51	55	106	201
Sequence Format										
Task F	29	29	58	4	2	6	2	3	5	69
Task G	*	*	*	*	*	*	23	25	48	48
Task L	*	*	*	9	11	20	12	13	25	45
Task M	23	26	49	*	*	*	20	23	43	92
TOTAL Sequence	52	55	107	13	13	26	57	64	121	254
Model Format	55	54	109	23	20	43	4	11	15	167
Spare Parts Format	15	21	36	24	17	41	4	11	15	93
Other Convers.	36	29	65	6	14	20	69	95	164	249
TOTALS	198	198	396	74	72	146	185	236	421	963

*This task was not performed by this dyad

an approximation of the volume of speech produced in performing each task. Tabulation of a ten percent sample indicates that the average utterance is about 5.7 words long, giving a total corpus of about 5500 words.

TABLE 2

Comparison of Convergent Communication and Naturalistic Observation Data

Construction	N.O. Data		CC Data		Difference
	No.	Per 1000 words	No.	Per 1000* words	(CC-N.O.) per 1000 words
Question	219	16.2	340	61.8	45.6
Have/Got	120	8.9	168	30.5	21.6
Copula	464	34.4	266	48.4	14.0
Comparative	14	1.0	7	1.3	0.3

*These figures are based on the total CC corpus, including conversation relevant to the administration of the tasks.

Comparison with the Naturalistic Obervation data (from Legum et al., 1971) in Table 2 suggests that the CC elicitation format had considerable influence on the relative frequencies of copula, question and have/got constructions, but little effect on the elicitation of comparatives. These data are not exactly comparable in that the Legum data were elicited from Black children by naturalistic observation, while the present data were elicited from Anglo children using convergent communication. The realizations of these constructions are known to be

influenced by ethnicity. However, there is no reason to believe that the relative frequency of occurrence of the constructions themselves is influenced by ethnicity. The differences are much more likely attributable to the difference in elicitation technique.

Copula Constructions

It had been anticipated that any particular task or format would have limited influence on the incidence of copula. The data show this not to be true. When items are distinguished by some attribute pertaining to the entirety of the item, descriptive statements tend to employ the copula. If the distinction is between a part and its absence, or in the number of parts, descriptive statements tend to employ have/got. When two items are distinguished by some other attribute of a part, such as color or size, either copula or have/got may be used.

attribute of the whole:	"Are they dark grapes?
number of parts:	"How many legs does he have?"
attribute of a part:	"Does it have a dark tail?" or "Is his tail dark?"

In the matching tasks items were distinguished by attributes of parts and the incidence of copulas per utterance is 0.24. In Sequence Task M the items differed in intensity of color and the incidence of copulas per utterance increases to 0.62.

The use of copula, and of questions, by Anglo children in this age range is not particularily interesting in itself. However, it is

relevant to compare it with the nonstandard usages of Black English. In the entire corpus there was one unambiguous instance of a deleted copula.

"Who you talking to, her?"

There were two instances of lack of number concord in the copula.

"How many is there altogether?"

"Is his stripes...?"

TABLE 3

COPULA

Use of Copula by dyad and format

	First Grade		Second Grade		Third Grade		Total	
Format	Total Copula	Copula/ Utterance	Total Copula	Copula/ Utterance	Total Copula	Copula/ Utterance	Total Copula	Copula/ Utterance
Matching	22	.28	10	.63	17	.16	49	.24
Sequence	69	.64	9	.35	41	.34	119	.47
Model	16	.15	7	.16	9	.60	32	.19
S. Parts	4	.11	5	.12	7	.47	16	.17
Other Convers.	12	.18	3	.15	35	.21	50	.20
Totals	123	.31	34	.23	109	.26	266	.28

Questions

As can be seen in Table 2, questions occur much more frequently in convergent communication than in free conversation. Table 4 shows that there was not a great difference in the rate at which Matching, Sequence and Model Formats elicited questions. However, each of these elicited questions far more frequently than the Spare Parts Format, which did not seek convergence, or even the Other Conversation which contained questions about the administration of the tasks.

There was one nonstandard question in the entire corpus. It resulted from non-inversion of the auxiliary.

"Which way it's going?"

Comparatives

The sequencing tasks were designed to elicit comparative constructions. In pretesting with adults they were highly successful. With the children, however, no comparatives were elicited by these tasks. Comparatives are perhaps late in the acquisition sequence, but they are used by kindergarten children (Berko, 1958). The few comparative constructions that were used were not used in performing the tasks but in other conversation with the interviewers. One child, when requesting to build another model argued "This is funner than playing outside."

The failure of the sequencing tasks to elicit comparatives may be related more to different strategies of problem solving than to any linguistic difference between adults and children in the use of comparatives. The informants treated each card in the sequencing tasks as a separate

TABLE 4

Questions used by each dyad in each format

Format	First Grade		Second Grade		Third Grade		Total	
	Total Questions	Questions/ Utterance	Total Questions	Questions/ Utterance	Total Questions	Questions/ Utterance	Total Questions	Questions/ Utterance
Matching	39	.49	4	.25	58	.55	101	.50
Sequence	55	.51	3	.12	47	.39	105	.41
Model	58	.53	5	.12	8	.53	71	.43
S. Parts	6	.17	3	.07	0	.00	9	.10
Other Convers.	15	.23	3	.15	36	.22	54	.22
TOTALS	173	.44	18	.12	149	.35	340	.35

unit, unrelated to the other cards. Degrees of size were stated in absolute size. The second graders described the pencils in Task L in inches, with remarkable accuracy. Others distinguished them as real tiny, tiny, big, and real big. In one instance the glasses in Task F were accurately sequenced when discriminated as half full and half empty.

In pretesting with adults it was found that giving D an extra card made the task much more difficult and seemed to increase the use of comparatives. For the children, it made the task too confusing.

Possessives

Of the possessive constructions used, only the have/got constructions showed any departure from standard usage. There were no instances in which nominative pronouns were substituted for possessive pronouns. It was anticipated that this would be true of Anglo subjects. There were also no instances in which the possessive marker was deleted from nouns. Such deletions are characteristic of the speech of very young children, as well as of Black English. These tasks elicited only nine possessive nouns, too few to be significant.

The elicitation format affects the frequency of have/got constructions as can be seen in Table 6. More have/got constructions were elicited in the Matching Format than in all the other formats combined, even though only 21% of the total utterances were produced in that format.

Garvey & Dickstein (1970) studied the use of have/got in the protocols of Garvey & Baldwin (1970, 1971). They found that tasks similar to the Matching Format and the Model Format produced a large number of have/got constructions. Another task, giving directions on a map, produced so few that it was excluded from their study.

Of the linguistic constructions studied which were elicited at high frequencies, have/got is of particular interest for Anglo children. Preliminary analysis of the nonstandard usage of have/got in these protocols suggests that there is a marked difference from the nonstandard usage of the Black children in Legum, et al., (1971).

TABLE 5

Use of possessive constructions by each participant

Type of Construction	First Grade		Second Grade		Third Grade		Total
	Par. A	Par. B	Par. A	Par. B	Par. A	Par. B	
Noun + 's	0	4	0	1	2	2	9
With	5	6	3	0	0	0	14
Possessive pronoun	4	30	7	3	1	2	47
Have/got	23	34	24	26	33	28	168
TOTALS	32	74	34	30	36	32	238

TABLE 6

Have/got

Use of have/got by each dyad in each format

Format	First Grade		Second Grade		Third Grade		Total	
	Total Have	Have/ Utterance	Total Have	Have/ Utterance	Total Have	Have/ Utterance	Total Have	Have/ Utterance
Matching	30	.38	28	1.75	30	.28	88	.44
Sequence	9	.08	4	.15	17	.14	30	.12
Model	13	.12	3	.11	3	.21	19	.11
S. Parts	1	.03	14	.34	0	.00	15	.16
Other Convers.	4	.06	1	.05	11	.07	16	.06
TOTALS	57	.17	50	.40	61	.24	168	.23

In the present data there were no instances of have replacing has, a characteristic feature of Black English. Some of the children interviewed in this study used have as an auxiliary with got. There were no instances of got with an auxiliary in the Black English data. The children in this study seem to use almost exclusively either have, got, or have-got, but not a combination of these. A more complete analysis of the have/got data elicited in this study and in previous work of the Dialect Characteristic Activity will be presented in a later paper (Berdan, in progress).

Performance

It is not clear that the kindergarten children ever comprehended the nature of the task. There was no communication between K and D on Matching Format tasks. These children were then given the Spare Parts. This resulted in considerable conversation. No other formats could be tested, however, since the children expressed a desire to leave. Data from the kindergarten interview have been excluded from this report.

The first graders performed all the formats successfully. Initially, however, they used strategies quite different from those by adults and older children. In the Matching Format, D described each of the variant figures in detail. When he had completed describing a figure he asked K if it were the correct one. K responded negatively, without elaboration and D proceeded to describe another variant. This procedure continued until he chanced upon the right variant. The older children

employed the same strategy as adults: K describes the variant he holds, responding to questions from D about particular features.

This finding is consistent with similar studies using young children. Glucksberg, et al., (1966) tested very young children (33-49 months) with a simplified version of his test materials. Even when the visual barrier was removed they did not perform successfully. Older children (52-63 months) succeeded with the simplified version of the test materials but could not perform using the same materials given to adults.

CONCLUSIONS

The frequency at which certain linguistic constructions occur is definitely influenced by elicitation technique. Each of the CC formats used increased the incidence of questions. A particular format, Matching, increased the incidence of the have/got construction. Certain tasks which involved differentiation of items by attributes of the whole item increased the incidence of the copula. Children did not use comparative constructions when performing tasks which elicited comparatives from adults.

For children of kindergarten age or younger other techniques of elicitation are perhaps more practical than convergent communication. Older children can be taught to perform the tasks adequately. For first grade children at least, it is probably not sufficient to give verbal instruction. It would probably be best to give each child a trial in which he is simultaneously given K and D stimulus materials. When it is clear that he can perform the task in this manner, the roles of K and D can be separated.

IMPLICATIONS FOR FUTURE WORK

Convergent communication can be developed into a tool for selectively eliciting a wide range of linguistic constructions from young children only with difficulty. The range of possible tasks is constrained by the limited ability of young children to perform complex tasks. Use of the technique is further complicated by the fact that the adult linguist cannot always appeal to his native speaker intuition to determine the range of possible responses which children will use in performing any task.

There is another area of linguistic research in which convergent communication can become a very productive elicitation technique. This is the exploration of verbal repertoire (Gumperz, 1969) or style and dialect switching. The use of a linguistic code (whether style, dialect or language) is influenced by a number of nonlinguistic factors. (Ervin-Tripp, 1964). A major factor is the status of person to whom one talks and the linguistic code which he employs. In the convergent communication technique the status relationship between the members of a dyad can be used as an independent variable. A possible design would have the following dyads.

Anglo Teacher	-	Anglo Teacher
Anglo Teacher	-	Anglo child
Anglo Teacher	-	Black Child
Anglo Child	-	Anglo Child
Anglo Child	-	Black Child
Black Child	-	Black Child

Many comparable designs could be used to explore the verbal repertoire of the bilingual or bidialectal person.

Some language enrichment programs currently claim to expand the child's repertoire by given him "school talk" as well as "play talk." Pratically nothing is known about the linguistic behavior of such children or even about adults who function successfully in more than one code. Convergent communication is a possible technique to explore this linguistic behavior.

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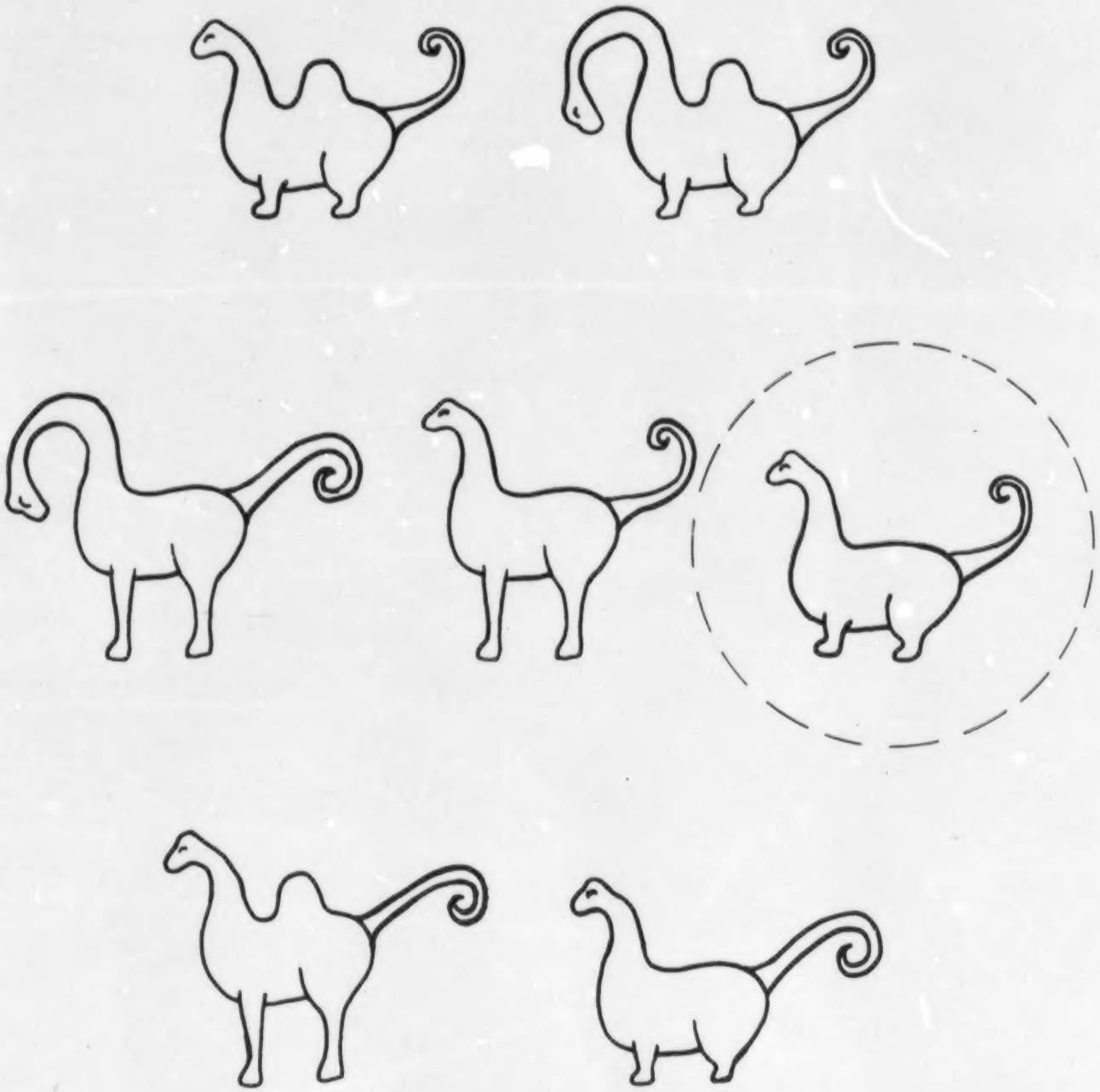
APPENDIX 1

Stimulus Materials

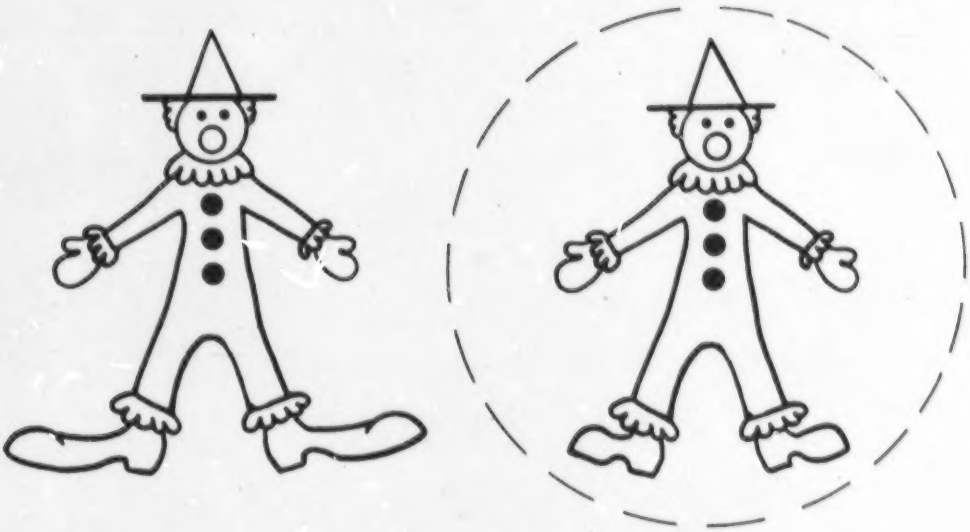
Matching Format

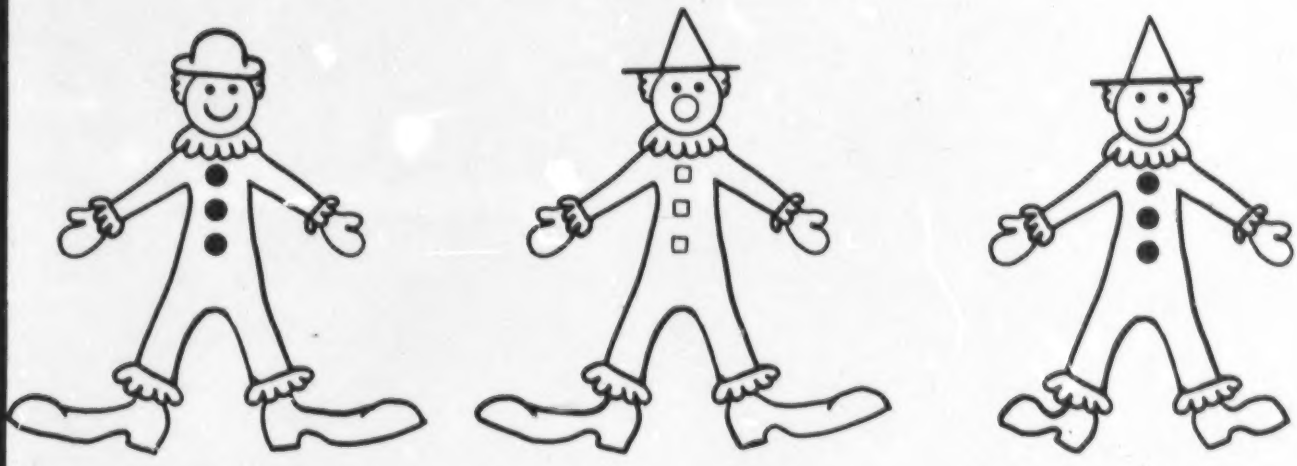
Task 2: (Doer)*

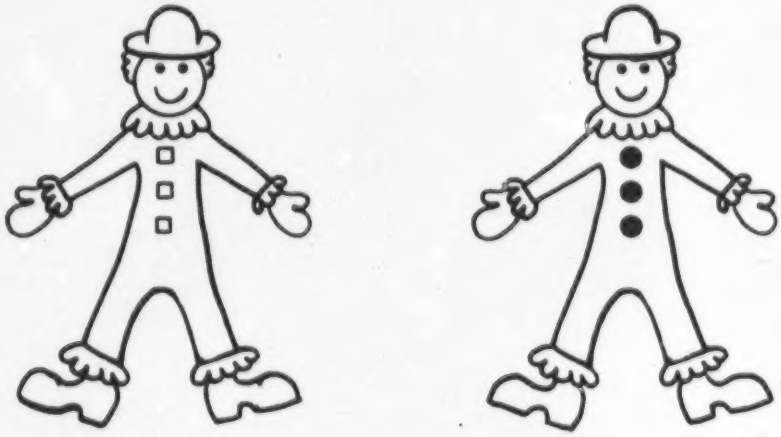


*The Knower received a sheet containing only the circled figure

Task 2:







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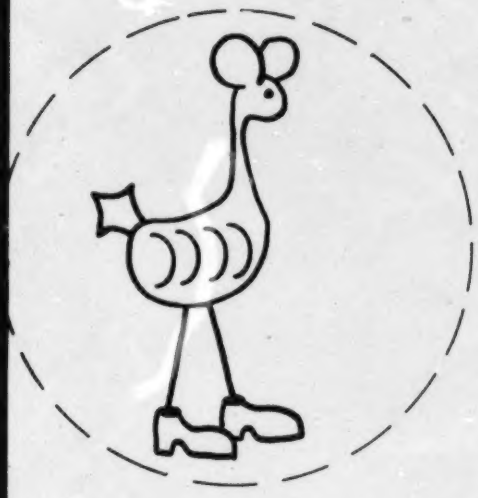

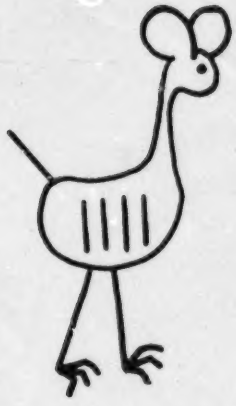

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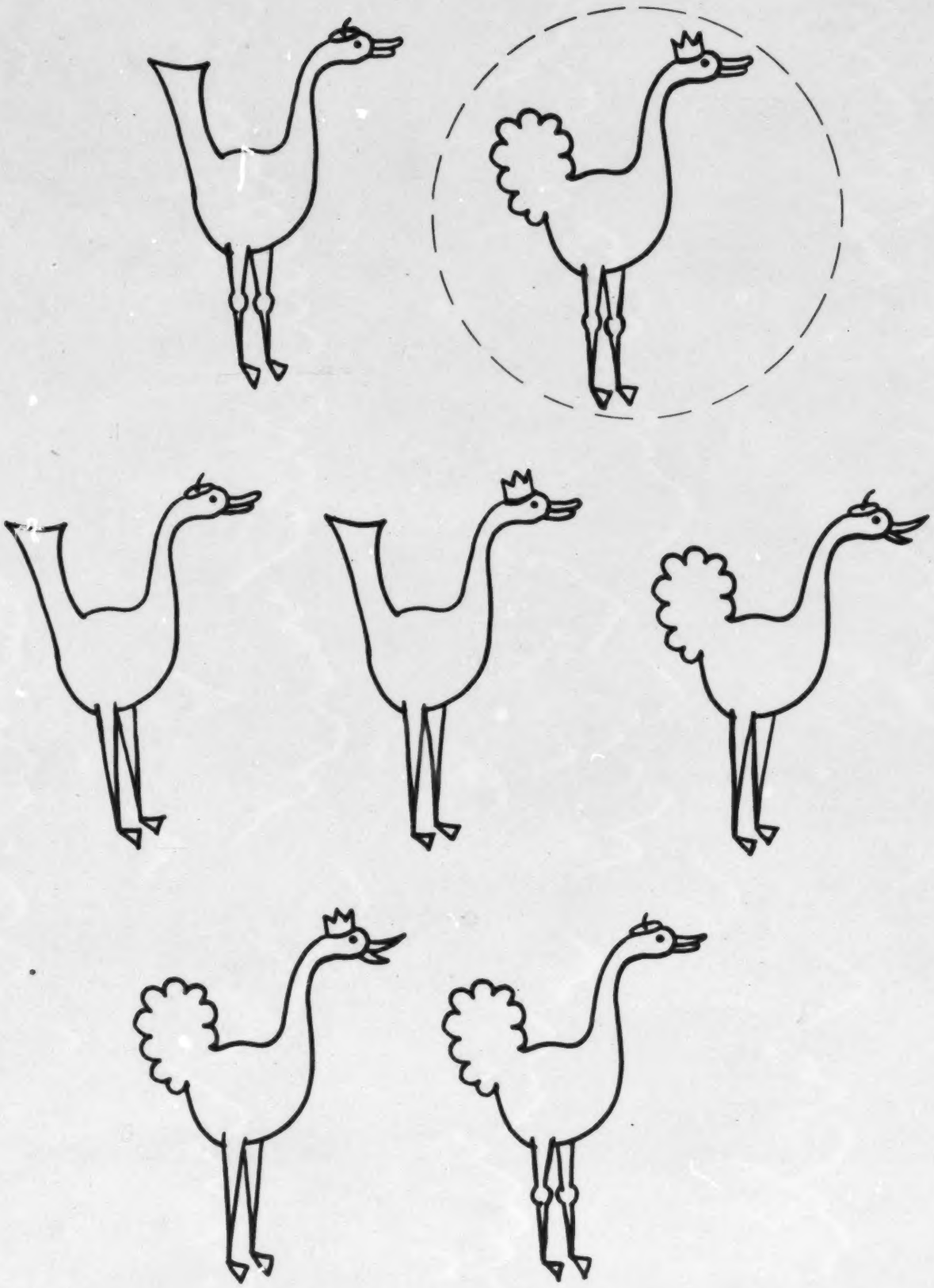

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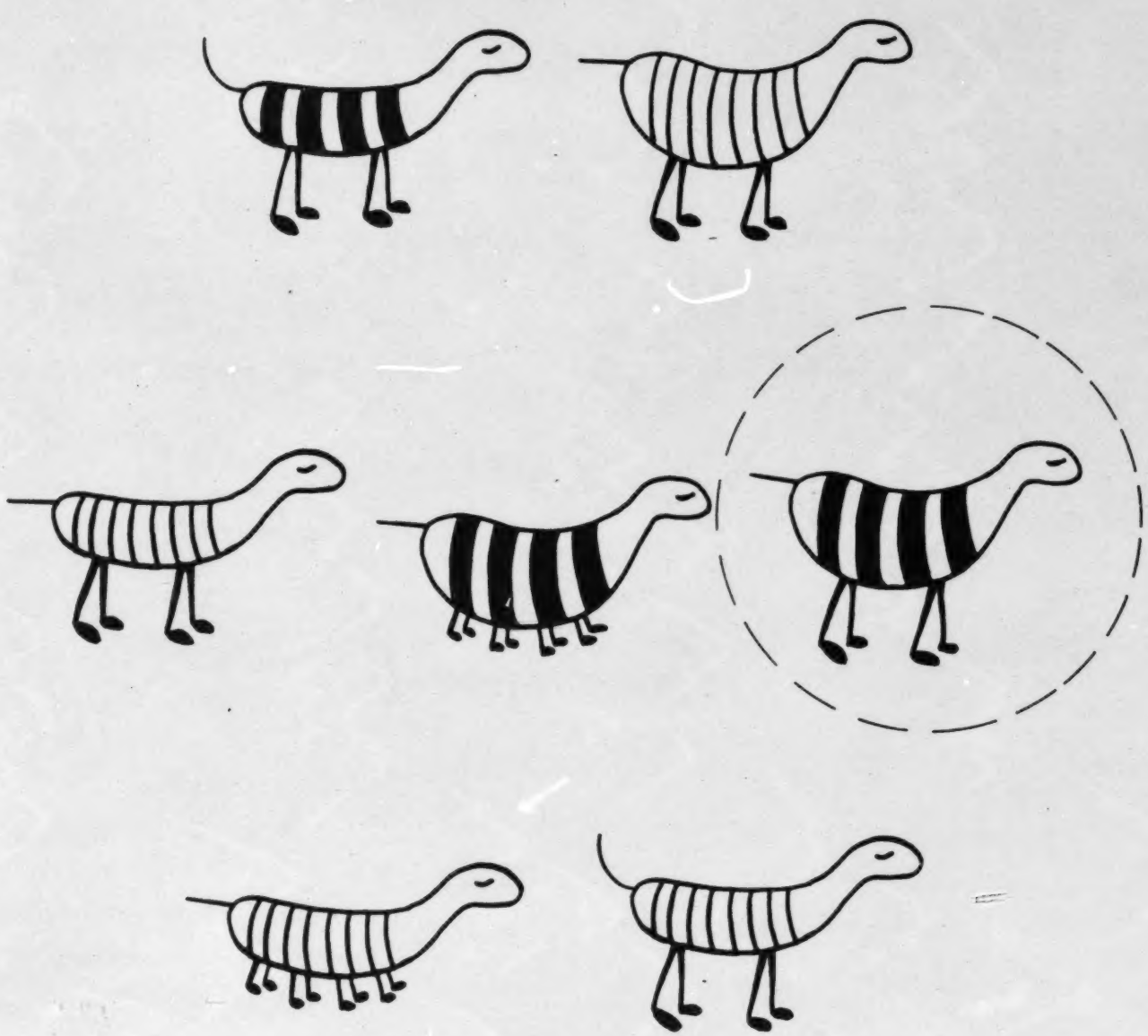

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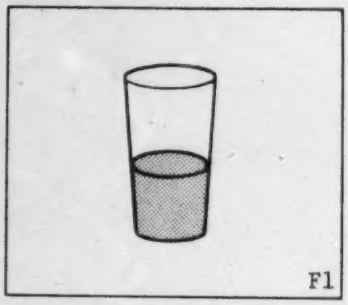
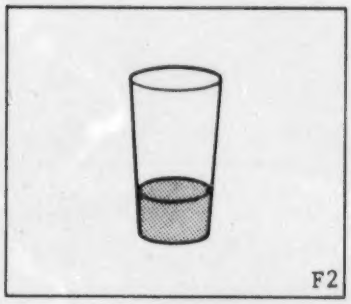
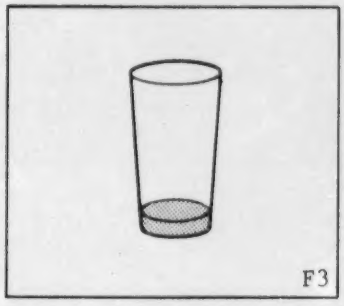
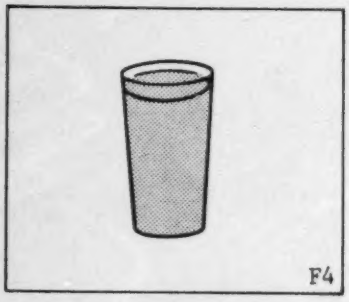
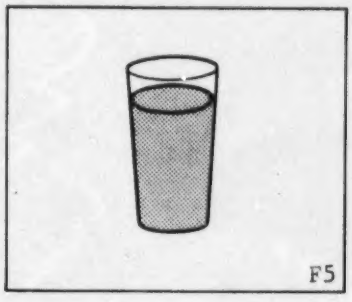
Sequence Format*

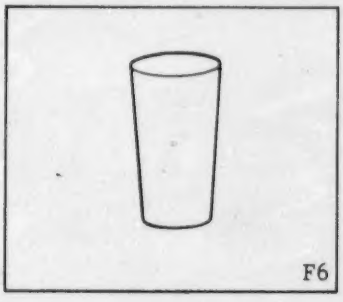




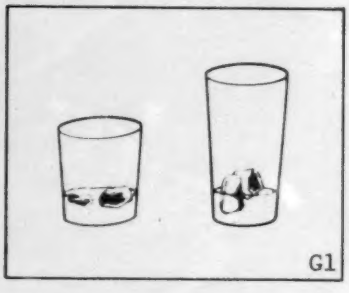


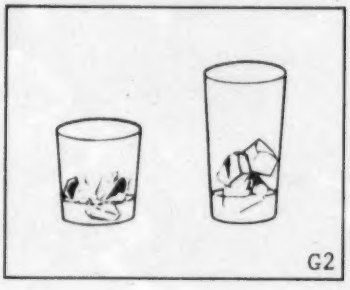


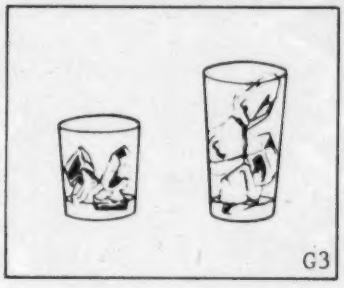


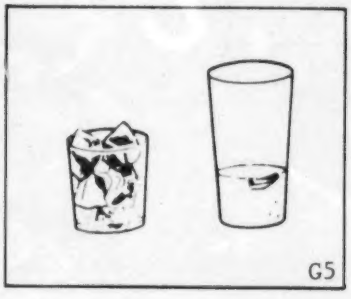


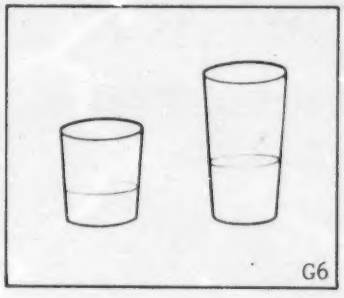
Task G:





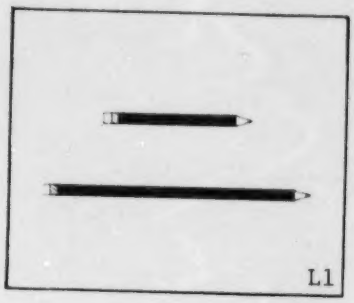


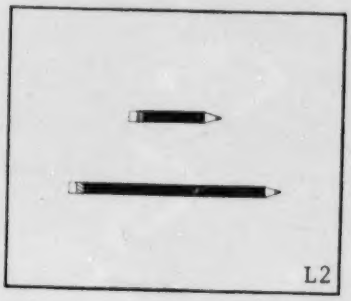


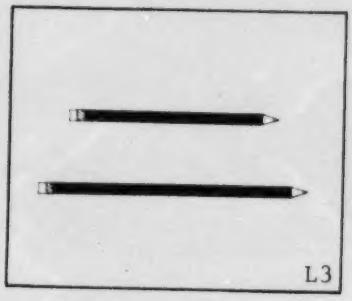


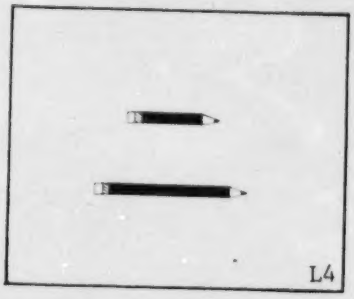
*Card 6 of each series was not used.

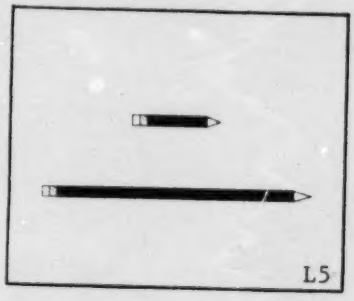
Task L:

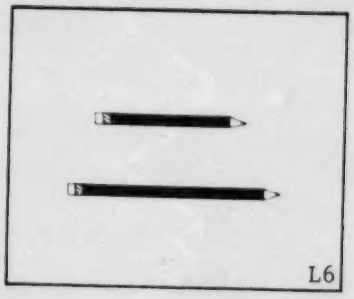




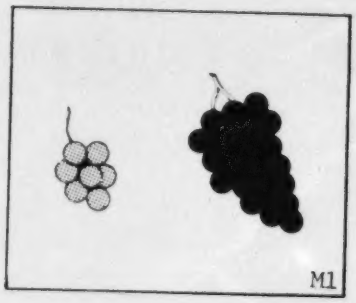


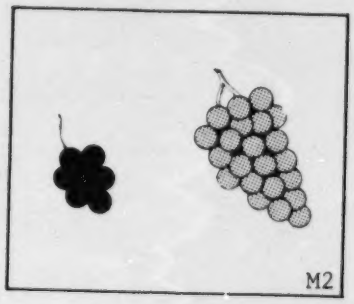


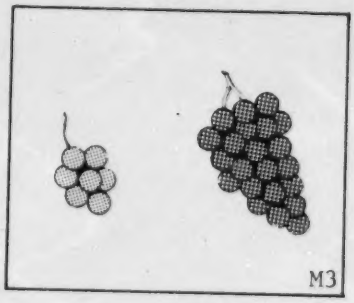


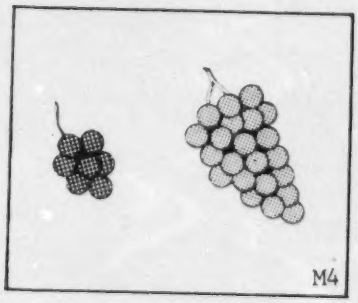


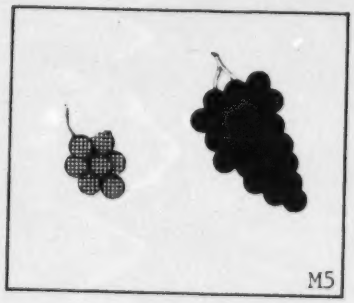
Task M:

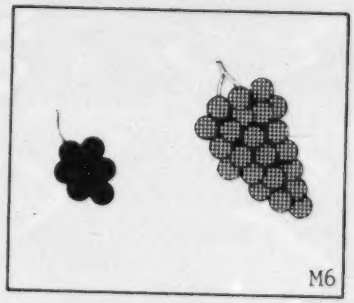












APPENDIX II

INSTRUCTIONS

MATCHING FORMAT

You will play this game as a team. One of you has a single picture. The other has a group of pictures. On of the pictures in the group is exactly the same as the single picture which your partner has on his/her sheet. You are to find out together which picture in the group matches the single picture. You may ask each other any question you like. You may take as long as you need to finish the game. You will not be able to see your partner's picture but you can tell him anything you feel he needs to know, even if he does not ask you. When you are sure you know which pictures are the same the team member with the group of pictures will show me the picture in the group which is the same as his partner's picture. At the end of the game I will tell you how many correct choices your team made. Do you have any questions before you begin?

SEQUENCE FORMAT

You will play this game as a team. One of you has a set of pictures that is arranged in order. The other partner has his pictures stacked in another order. You will work as a team to get the set of pictures in the same order as the pictures on the flat surface. The partner with the stacked set (indicate which partner you mean) will take one card at a time from the stack. You will question or tell the other partner about the picture. You will decide together where the picture should be

placed on the flat surface in front of you. When that picture is placed, the partner with the stacked set may pull another picture and tell the other partner about it. You will do this until all the pictures from the stacked set are turned over. You may check with your partner think it is necessary. You may not show your partner any of the pictures but you may tell him anything you think he needs to know. When you decide you are finished show me the set. At the end of the game I will tell you how many sets you arranged correctly as a team. Do you have any questions before you begin?

MODEL FORMAT

This is the final game. You will play as a team again. On partner has a model which is all complete with no missing pieces. The other partner has all the same pieces, but only a part of his model is complete. Together you will complete the model. The partner with complete model (indicate who you mean) will tell the other partner what he must do to complete the model. You may tell him anything you think he needs to know. He may ask you any questions he needs to ask to get the correct information. The partner who is completing the unfinished model may change the pieces around whenever he feels he needs to do so. All pieces are needed to complete the model, so no pieces will be left over at the end of the game. Try to keep your pieces on the table, if you drop one I will get it for you, so you will not have to get up from your seat. When you feel you have made the unfinished model up to look

the same as the complete one tell me. I will show you both models at the end of the game. Do you have any questions before you begin?

APPENDIX III

Order of presentation of tasks.

Interview One (Second Grade)

Matching Format
- Task 2
- Task 3

Sequence Format
- Task F
- Task L

S. Parts Format

Model Format

Interview Two (Third Grade)

S. Parts Format

Model Format

Matching Format
- Task 2
- Task 3
- Task 1
- Task 4
- Task 5

Sequence Format
- Task F
- Task L
- Task M
- Task G

Interview Three (Kindergarten)

Matching Format
- Task 2
- Task 3

S. Parts Format

Interview Four (First Grade)

Matching Format
- Task 2
- Task 3
- Task 4
- Task 1

S. Parts Format

Model Format

Sequence Format
- Task M
- Task F

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